Listing of the Claims

1. (Original) A time indicator comprising:

a front part comprising an opaque layer and a colorant layer in contact with the opaque layer at an interface, the colorant layer comprising a matrix and a colorant in the matrix, the colorant having a non-migratory form in which the colorant does not migrate in the matrix to the interface and a migratory form in which the colorant migrates in the matrix to the interface; and

a back part comprising a reactant capable of migrating in the colorant layer,

wherein, when the front part and the back part are placed in contact, the reactant migrates into the colorant layer and reacts with the non-migratory form of the colorant converting the non-migratory form of the colorant to the migratory form of the colorant such that the migratory form of the colorant migrates to the interface and through the opaque layer to cause a visual color indication in the front part.

2. (Original) The time indicator of claim 1 wherein:

the non-migratory form of the colorant is an ionomer dye.

3. (Original) The time indicator of claim 2 wherein:

the matrix comprises a pressure sensitive adhesive.

4. (Original) The time indicator of claim 1 wherein:

the non-migratory form of the colorant includes an acid group,

the reactant has a basic pH, and

an acid-base reaction between the non-migratory form of the colorant and the reactant converts the non-migratory form of the colorant to the migratory form of the colorant.

5. (Original) The time indicator of claim 4 wherein:

the acid group is a sulfite group.

6. (Original) The time indicator of claim 4 wherein:

the reactant is an amine.

7. (Original) The time indicator of claim 1 wherein:

the front part further comprises a transparent layer in contact with the opaque layer at a surface of the opaque layer opposite the interface.

8. (Original) The time indicator of claim 7 wherein:

the transparent layer comprises a transparent substrate and a transparent adhesive providing adhesion between the transparent substrate and the opaque layer.

9. (Original) The time indicator of claim 1 wherein:

the front part further comprises a neutralizing layer in contact with the colorant layer at a surface of the colorant layer opposite the interface,

the reactant is capable of migrating through the neutralizing layer to the colorant layer, and

the neutralizing layer includes an amount of a coreactant that reacts with an amount of the reactant to form a reaction product such that at least a portion of the reactant entering the neutralizing layer does not migrate into the colorant layer.

10. (Original) The time indicator of claim 9 wherein:

the coreactant has a pH opposite to that of the reactant, and

an acid-base reaction forms the reaction product.

11. (Original) The time indicator of claim 10 wherein:

the reactant is an amine, and

the coreactant is an acid.

12. (Original) The time indicator of claim 9 wherein:

the reactant is a reduced species,

the coreactant is an oxidizing agent, and

an oxidation-reduction reaction forms the reaction product.

13. (Original) The time indicator of claim 9 wherein:

the front part further comprises a timing layer in contact with the neutralizing layer at a surface of the neutralizing layer opposite the colorant layer, and

the reactant is capable of migrating through the timing layer to the neutralizing layer.

14. (Original) The time indicator of claim 13 wherein:

the timing layer comprises a material selected from the group consisting of pressure sensitive adhesives, hydrogels, polymer resins, and mixtures thereof.

15. (Original) The time indicator of claim 13 wherein:

the timing layer comprises a polymer resin and a plasticizer.

16. (Original) The time indicator of claim 1 wherein:

the back part further comprises a base substrate in contact with the reactant.

17. (Original) The time indicator of claim 1 wherein:

the opaque layer has an acidic pH, and

the colorant that migrates into the opaque layer undergoes a color change due to the acidic pH.

18. (Original) A time indicator comprising:

a front part comprising an opaque layer, a colorant layer in contact with the opaque layer at an interface, a neutralizing layer in contact with the colorant layer at a surface of the colorant layer opposite the interface, and a transparent layer in contact with the opaque layer at a surface of the opaque layer opposite the interface, wherein

the colorant layer comprises a matrix and a colorant in the matrix, the colorant has a non-migratory form in which the colorant does not migrate in the matrix to the interface and a migratory form in which the colorant migrates in the matrix to the interface; and

a back part comprising a reactant capable of migrating in the colorant layer and the neutralizing layer,

wherein, when the front part and the back part are placed in contact, the reactant migrates into the neutralizing layer and an amount of the reactant reacts with an amount of a coreactant in the neutralizing layer to form a reaction product such that at least a portion of the reactant entering the neutralizing layer does not migrate out of the neutralizing layer, and

wherein unreacted reactant migrates into the colorant layer and reacts with the non-migratory form of the colorant converting the non-migratory form of the colorant to the migratory form of the colorant such that the migratory form of the colorant migrates to the interface and through the opaque layer to cause a visual color indication in the transparent layer.

19. (Original) The time indicator of claim 18 wherein:

the front part further comprises a timing layer in contact with the neutralizing layer at a surface of the neutralizing layer opposite the colorant layer, and

the reactant is capable of migrating through the timing layer to the neutralizing layer.

20. (Original) The time indicator of claim 18 wherein:

the reactant is a base, the coreactant is an acid, and an acid-base reaction forms the reaction product, and

the non-migratory form of the colorant is an ionomer dye.

21. (Original) The time indicator of claim 20 wherein:

the reactant is an amine, and

the ionomer dye includes a sulfite group.

22. (Original) The time indicator of claim 21 wherein:

the matrix comprises a pressure sensitive adhesive.

23. (Original) The time indicator of claim 20 wherein:

the reactant is included in a reactant layer comprising a pressure sensitive adhesive.